

U.S. Department of Energy

Performance Evaluation Study

MAPEPE-03-S10

CLOSING DATE: October 15, 2003 18:00 MST

Radioactive Decay Correction Date for this Sample:
January 1, 2003, 12:00 Mountain Standard Time (MST).

PLEASE READ ALL INSTRUCTIONS

CAREFULLY BEFORE ANALYZING SAMPLE

IMMEDIATELY UPON RECEIPT OF SAMPLES
CHECK FOR BREAKAGE AND SHIPPING ERRORS;
SAMPLE REPLACEMENT TAKES AT LEAST
2 TO 3 DAYS

INSTRUCTIONS FOR MAPEPE-03-S10 SAMPLE

1. MAPEP Performance Standards

Water Sample:

Domestic laboratories performing radiological/inorganic AND organic analyses will receive TWO one-liter sample bottles; the organic shipment should follow the radiological/inorganic shipment by about one week. **It is CRITICAL that radiological and stable inorganic analyses utilize sample from ONLY the bottle marked for radiological and inorganic analyses. Organic analyses must utilize sample from ONLY the bottle marked for organic analyses.** Failure to utilize the appropriate sample bottle will yield incorrect results.

Soil Sample:

All laboratories performing radiological/inorganic and organic analyses will receive ONE ~300 gram sample jar of soil. The soil contains ALL analytes (radiochemical, inorganic and semi-volatile organics).

2. SAMPLE DESCRIPTION

The analytes for the MAPEP-03-S10 soil, and their concentration ranges, are listed in the following tables. Each participant will receive a single sample containing approximately 300 grams of soil.

3.

RADIOLOGICAL CONSTITUENT DESCRIPTION

Analyte	Concentration Range	Analyte	Concentration Range
^{57}Co , ^{134}Cs , ^{137}Cs , ^{54}Mn , ^{65}Zn , ^{60}Co , ^{40}K	< 4000 Bq/kg	^{55}Fe , ^{63}Ni	< 2000 Bq/kg
^{90}Sr	< 1000 Bq/kg	^{241}Am , ^{238}Pu , ^{239}Pu , ^{234}U , ^{238}U	< 300 Bq/kg

NOTE: The ^{234}U and ^{238}U isotopes may NOT be in equilibrium. Some of the radionuclides listed on the sample description may not be detected.

STABLE INORGANIC CONSTITUENT DESCRIPTION

Analyte	Concentration Range	Analyte	Concentration Range
Ag, As, Be, Cd, Tl, Pb, Sb, Se	1 - 50 mg/kg	Ba	100 - 1000 mg/kg
Cr(Total), Ni, V, Zn	5 - 200 mg/kg		

NOTE: Not all the stable inorganic constituents listed in the table above are present. Laboratories should only report those constituents that are quantitated ABOVE the minimum concentration range listed for that analyte.

SEMI-VOLATILE ORGANIC SAMPLE DESCRIPTION

Sample holding time is based upon the date of **RECEIPT** of the sample by the participating laboratory.

Analyte Class	Concentration Range	Analyte Class	Concentration Range
Phthalate Esters	< 900 ug/kg	Polynuclear Aromatics	< 1000 ug/kg
Phenols	< 1200 ug/kg	Nitroaromatics	< 900 ug/kg
Chlorinated Hydrocarbons	< 900 ug/kg	ug = micrograms kg = kilograms	

- Analyze the sample for those analytes that comprise your routine function or constitute your compliance requirements.

REPORTING INORGANIC ANALYTES:

Some of the inorganic analytes listed on the MAPEPE-03-S10 sample description may not be above the lower concentration range stated. Report only stable inorganic analytes detected above the stated lower concentration range. Total uranium, uranium-238, and uranium-235 can be reported when utilizing mass spectrometric techniques under the stable inorganic analytes section. Report all results based on a sample weight in mg/L (milligrams per Liter) for water and mg/kg (milligrams per kilogram) for soils. "Less Than" ('<') with an established Detection Limit is acceptable for reporting Stable Inorganic Analytes. Results reported as zeros will be flagged as unacceptable.

DO NOT USE CLP reporting flags (U, J, etc.).
DO NOT USE 0.00 (zero) as a reportable value.

REPORTING RADIOLOGICAL ANALYTES:

Radiological analyses should report results for only the analytes listed on the sample description. Other analytes may be detectable but will not be evaluated. Conversely, some of the radiological analytes listed on the sample description may not be detected. Report the actual results obtained for sensitivity determination and false positive testing, including negative numbers (i.e., do not report results as “Less Than” or “Not Detected”). Report all results in Bq/L (Becquerel per Liter) for water and Bq/kg (Becquerel per kilogram) for soil.

REPORTING SEMIVOLATILE AND VOLATILE ORGANIC ANALYTES:

Organic analyses should report only the detectable analytes from the targeted organic classes. For water sample calculations, assume a liquid sample volume of 1000 mL. Report results to three significant figures as micrograms per Liter ($\mu\text{g/L}$) for water and ($\mu\text{g/kg}$) for soils.

For this soil distribution, several target semi-volatile organic constituents were added at levels below published detection limits. Extraction of larger sample sizes will assist in correct identification and quantitation of these constituents. Refer to list of target analytes at the end of these instructions.

DO NOT USE CLP reporting flags (U, J, etc.).

DO NOT USE 0.00 (zero) as a reportable value.

DO NOT USE < (less than) as a reportable value.

4. You are required to report only ONE result for each appropriate analyte. If the reported result is actually a mean of several replicate analyses, the reported uncertainty should also be the MEAN of the INDIVIDUAL uncertainties. Do NOT propagate the individual uncertainties for replicate measurements. For example, assume three replicate analyses provided the following results and individual uncertainties: 101 +/- 12, 108 +/- 15, 110 +/- 16. The mean result is $(101+108+110)/3=106$ and the MEAN INDIVIDUAL UNCERTAINTY is $(12+15+16)/3=14$. The reported result and uncertainty is 106 +/- 14. The total uncertainty should be at the one sigma level. Propagated uncertainties are required for radiological constituents and are strongly encouraged for the inorganic and organic constituents.
5. The laboratory may choose the analytical method.
6. The amount of sample is limited. The laboratory should use the list of concentration ranges to select the optimum amount of sample for each analysis to ensure that sufficient sample is available for all of the analyses.

7. Excess sample or residues shall not be returned to RESL. Do not initiate analysis of the sample if approved waste treatment, storage, or disposal options are not available.

"MAPEP samples are analytical standards or a "product" generated for the purpose of securing and evaluating analytical services; they are not hazardous waste and they are not samples of hazardous waste... Thus, a laboratory participating in the MAPEP is in the process of establishing its eligibility and credentials to do DOE analytical work. It follows, therefore, that the laboratory is the "generator" of the waste resulting when the samples and the resulting residues are to be discarded." (MEMORANDUM OCC-95-189, Office of Chief Counsel, October 16, 1995)

8. Report results electronically via the World Wide Web application at <http://mapep.inel.gov/>. Login information including user ID and password are in the cover letter associated with this sample.
9. Please ensure that your lab code, addresses, E-mail and NRC license information is entered correctly in the data entry program. You are a U.S. Federal Laboratory ONLY if your employees are federal government workers (i.e., EPA, USGS, EML, NRC, etc.) If you are a primary contractor for a DOE National Laboratory you may have a DOE exemption and, if so, need to enter your contract number. Participants that are subcontracted to do analyses for other MAPEP participants need to list their contracting laboratories under the ADDITIONAL ADDRESSES option (under LABORATORY INFORMATION in the main menu; see the MAPEP HANDBOOK).
10. The reference date for radioactive decay correction is January 1, 2003, 1200 Mountain Standard Time (MST). Sample holding time is based upon the date of RECEIPT of the sample by the participating laboratory.
11. **Results are due by October 15, 2003, 1800 MST (Mountain Standard Time).** Late results will not be included in the final report.
12. Please address any questions to the appropriate point of contact:

Jim Dahlgran (208-526-6243, dahlgrjr@inel.gov): data entry and organic analyses
Mary Verwolf (208-526-7001, verwolmc@inel.gov): stable inorganic analyses
David Sill (208-526-8031, sillds@inel.gov): radiological analyses

MAPEP Semi-Volatile Organic Target Compounds

Soil and water samples should be analyzed for the following target analytes:

MAPEP Target Analyte List

<i>Phenols</i>	<i>Chlorinated Hydrocarbons</i>	<i>Nitroaromatics</i>	<i>PAHs</i>
4-Chloro-3-methylphenol	2-Chloronaphthalene	<i>Cyclic Ketones</i>	2-methylnaphthalene
2-Chlorophenol	1,3-Dichlorobenzene	Nitrobenzene	Naphthalene
2,4-Dichlorophenol	1,4-Dichlorobenzene	1,3-Dinitrobenzene	Acenaphthylene
2,6-Dichlorophenol	1,2-Dichlorobenzene	1,2-Dinitrobenzene	Acenaphthene
2,4-Dimethylphenol	Hexachlorobenzene	1,4-Dinitrobenzene	Fluorene
2,4-Dinitrophenol	Hexachlorobutadiene	2,4-Dinitrotoluene	Phenanthrene
4,6-Dinitro-2-methylphenol	Hexachlorocyclopentadiene	2,6-Dinitrotoluene	Anthracene
2-Methylphenol	Hexachloroethane	2-Nitroaniline	Fluoranthene
4-Methylphenol	1,2,4,5-Tetrachlorobenzene	3-Nitroaniline	Pyrene
3-Methylphenol	1,2,4-Trichlorobenzene	4-Nitroaniline	Benzo(a)anthracene
2-Nitrophenol	Pentachlorobenzene	Isophorone	Chrysene
4-Nitrophenol	Pentachloronitrobenzene	1,4-naphthoquinone	Benzo(b)fluoranthene
Pentachlorophenol	4-Chloroaniline	<i>Phthalate Esters</i>	Benzo(k)fluoranthene
Phenol	<i>Other</i>	Dimethylphthalate	Benzo(a)pyrene
2,3,4,6-Tetrachlorophenol	o-Toluidene	Diethylphthalate	Indeno(1,2,3-c,d)pyrene
2,4,5-Trichlorophenol	Benzyl alcohol	Di-n-butylphthalate	Dibenzo(a,h)anthracene
2,4,6-Trichlorophenol	Dibenzofuran	Butylbenzylphthalate	Benzo(g,h,i)perylene
Dinoseb	2-Naphthylamine	Bis(2-ethylhexyl)phthalate	
	Aniline	Di-n-octylphthalate	
	1,4-phenylenediamine		
<i>Chlorinated Pesticides</i>			
alpha-BHC	beta-BHC	Lindane	
delta-BHC	Heptachlor	Aldrin	
Heptachlor epoxide	Endosulfan I	4,4'-DDE	
Dieldrin	Endrin	Endrin Aldehyde	
Endosulfan Sulfate	Endrin Ketone	methoxychlor	

Target compounds are chosen from target analyte lists associated with U. S. Environmental Protection Agency methods SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 8270 Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS): Capillary Technique or Method 625 found in U.S. Code of the Federal Register 40CFR Part 136.

MATERIAL SAFETY DATA SHEET IS ENCLOSED

END OF INSTRUCTIONS